REMARKS

By the present amendment, claims 1 and 2 have been amended to obviate the examiner's objections thereto and/or to further clarify the concepts of the present invention. Claims 1-4 and 6 still are pending.

It is submitted that these amendments to the claims are helpful in distinguishing the subject claims over the cited prior art and/or do not raise new issues which would require further consideration and/or search. In addition, it is submitted that such amendments place the application in better form for appeal by materially reducing or simplifying the issues for appeal. Furthermore, no additional claims are presented without cancelling a corresponding number of finally rejected claims. In view of the above, it is submitted that entry of the above amendments is in order and such is respectfully requested.

In the Office Action, claims 1-4 and 6 were rejected under the first paragraph of 35 USC § 112 as containing subject matter which was not described in the specification. Specifically, it was asserted that the claim limitation that "some of the Si particles have an average size greater than 10 μm" was not supported in the subject specification. It was particularly noted that the words "some" and "average"

were emphasized in stating the reasons for the rejection. Reconsideration of this rejection in view of the above claim amendments and the following comments is respectfully requested.

It is submitted that the claims are in conformance with the provisions of the cited statute. More particularly, it is submitted that claims 1 and 2 have been amended to modify the language so as obviate the specific objections to the two noted terms. Specifically, the phrase has been amended to recite "the granular Si particles having a short-diameter/long diameter ratio of 1/3 or more and including granular Si particles having a particle size greater than 10 μm." Accordingly, withdrawal of the rejection under the first paragraph of 35 U.S.C. § 112 is respectfully requested.

Claims 1-4 were rejected under 35 USC § 103(a) as being unpatentable over the patent to Mori et al in view of the patent to Kawagoe et al. In making this rejection, again it basically was asserted that the cited Mori et al patent teaches Al-Si or Al-Si-Sn compositions with ranges for the disclosed components which overlap those as claimed in independent claims 1 and 2. With regard to the claim limitation of the ratio of the short diameter to the long diameter, Figure 1 of the Mori et al patent was alleged to show this feature. With regard to the claim limitation of the

particle size greater than 10 μm, it was asserted that (1) the comparative example teaches such particles and further that (2) the Mori et al patent teaches that these particles are undesirable in the specifically disclosed materials. From the latter statement (2), it was further presumed that such materials actually had been made by the inventors of the cited patent.

Further, it was acknowledged that the Mori et al patent does not teach the use of (a) HVOF flame spraying of applying the alloy and (b) surface roughening of the substrate by shot blasting. As to the former (a), it was alleged that the HVOF is a well known form of thermal spraying as taught by the Mori et al patent. As to the latter (b), the cited patent to Kawagoe et al was asserted to provide this deficiency. Reconsideration of this rejection in view of the above claim amendments and the following comments is respectfully requested.

It is submitted that the cited Mori et al patent does not teach or suggest the subject matter as is now set forth in amended claims 1 and 2 and the claims dependent thereon. Among others, it is submitted that an important difference between the subject matter as set forth in claims 1 and 2 and the cited Mori et al patent is that the compositions according to the invention have include particles having a particle size greater than 10 μm and such is not suggested in the patent.

More particularly as to assertion (1) above, the fact that the comparative example of the Mori et al patent teaches such particles is irrelevant as the composition of the comparative example has not being applied in alleging that the claimed subject matter is unpatentable. Rather, it was alleged that the subject claims are obvious over the supposed inventive concept according to the Mori et al patent. Thus, it is submitted that the focus should be whether one of ordinary skill in the art, who was aware of the Mori et al patent, would utilize the disclosure from the comparative examples as to a particle size in the compositions according to the supposed inventive compositions disclosed in the patent. It is submitted that one of ordinary skill in the art would not be taught or suggested to do so by the teachings of the cited patent, particularly in view of the statement that particles of sizes greater than 10 μm are undesirable.

In support of the above, attention is directed to the attached publication from the Journal of Japan Institute of Metals Vol. 40, 2001, pages 356-359 entitled "Application of Wear Resistant Flame Spraying Technique to Automotive Parts" by Hideo Tachikawa, Kazuyuki Nakanishi and Hiroyuki Mori and partial translation thereof. The authors report fine Si particles of sprayed Al-Si, particularly the primary Si is of extremely fine size such that it is submicron order and that the primary Si is smaller than that in the powder by one order of magnitude.

As to assertion (2) above that the Mori et al patent teaches that particles of this size are undesirable in the specifically disclosed materials weighs in the favor of the patentability of the subject claims since the cited patent teaches away from the claimed concept. In addition, the presumption stated in the rejection that such materials actually had been made by the inventors of the Mori et al patent is speculation. The mere statement in a patent that a certain structure is undesirable does not mean that such a structure actually has been made.

In response to the above, it was asserted in the Action that since the comparative example shows a composition having particle sizes as large as 20 μm, applicants' prior assertion that such a material had never been made is in error. It is submitted that the issue under consideration has been confused. The original assertion was that the inventors in the Mori et al patent must have made the inventive compositions with particle sizes as large as 20 in order to make the statement that such particle sizes are undesirable. The fact of comparative compositions have such particles is not relevant to the assertion.

In summary, the particle size of 20μm disclosed in the Mori et al patent is that of comparative Example (c), that is, a casting method. This particle size therefore does not show the size of flame-sprayed material. It must be emphasized that the

inclusion of relatively coarse Si particles of more than 10 μm as shown in Fig. 1 of the present application contributes to enhance both wear resistance and seizure resistance with the materials according to the present invention. In contrast, the Si particles are fine (less than 10 μm) in the Mori et al patent and only contribute to enhance the wear resistance.

A position taken in the Action relative to the products according to the Mori et al patent was that the burden of showing that the products according to the invention patentably distinguish over the products according to the prior art is placed upon applicants. In order to overcome this position, applicants submit that the products according to the claimed invention differ from those of the prior art in terms of structure as indicated above and thus one or more properties and these differences produce unexpected or surprising results. In support thereof, attention is directed to the Declaration by Mr. Muramatsu attached hereto where flame-sprayed Al and cast Al-Si are compared with regard to the seizure load. In other words, this is the same materials as in Table 2 of the specification, but for the measured value of seizure resistance.

It is further submitted that another important difference between the subject matter as set forth in independent claims 1 and 2 and the cited patent is that the

composition according to the invention is "flame-sprayed by means of high velocity oxy-fuel flame-spraying method (HVOF) onto a substrate roughened by shot blasting" as opposed to being thermally sprayed as taught by the Mori et al patent. The HVOF method produces a special morphology of the Si particles as is set forth on page 5, line 32 of the subject specification. The shape of Si particles shown in Fig. 1 of the present invention is neither globular nor needle-like, but rather is irregularly shaped.

More particularly, Fig. 1(B) of the Mori et al patent shows a cast Al-Si alloy in which Si particles with nodular or plate-like morphology and fine intermetallic Si compounds with needle-like morphology are dispersed, these expressions of morphology being based on text book terminology. The Si particles of a HVOF flame-sprayed alloy are more round that the Si particles of a cast Al-Si alloy. Although two distinct morphologies are found in Fig. 1(B) of the Mori et al patent, only one morphology is found in Fig. 1 of the present invention. As can be understood from the above explanation, the use of HVOF is not only a process feature, but also is a feature which differentiates the morphology of Si particles from the cast alloy. Therefore, the microstructure of the compositions of the present invention which is formed by HVOF is different from that formed by plasma spraying.

In support of the above regarding the microstructures of Al alloys which have

been flame-sprayed by HVOF, attention is directed to the attached technical paper published this year in "Thermal Spray 2003, Advancing the Science & Applying the Technology" edited by C. Moreau and B. Marple and published by ASM International, Materials Park, Ohio entitled "Development of HVOF Sprayed Aluminum Alloy Engine Bearings" Of significance is the statement therein that HVOF has been investigated as an alternative process for bearing manufacture and as a route to producing novel bearing materials with microstructures that cannot be ached using the conventional casting route. The paper also shows the microstructure of Al-Sn-Si alloy formed by HVOF in Fig. 4.

It is submitted that the above noted teaching deficiencies of the Mori et al patent are not supplied by the Kawagoe et al patent. Specifically, it is submitted that one of ordinary skill in the art would not employ the surface roughening as taught by the secondary Kawagoe et al patent in the product as disclosed in the primary patent to Mori et al. Therefore, one of ordinary skill in the art would not be led to select or turn to the teachings of the secondary patent.

As is well settled, obviousness under Section 103 of the statute requires a teaching or suggestion in the art to combine the teachings of the patents as proposed by the examiner with the expectation that the results achieved would have been

predicted by that person of ordinary skill. The patents provide no suggestion to motivate one of ordinary skill in the art to combine their teachings in the manner proposed by the examiner. It is an established principle of U.S. patent practice that the prior art must contain some suggestion for combination since without such, any combination is pure speculation on the part of the examiner and is based on a prohibited hindsight reconstruction from applicants' own disclosure.

For the reasons stated above, withdrawal of the rejection under 35 U.S.C. § 103 and allowance of claims 1 through 4 as amended over the cited patents are respectfully requested.

Claim 6 again was rejected under 35 USC § 103(a) as being unpatentable over the same patent to Mori et al in view of the patent to Kawagoe et al further in view of the patent to Wilkoz et al. In making this rejection, it was acknowledged that the combination of the Mori et al and Kawagoe et al patents does not teach a layer covering the outer surface of the wear resistant coating. The additionally cited Wilkoz et al patent was then asserted to provide this deficiency. Reconsideration of this rejection in view of the above claim amendments and the following comments is respectfully requested.

It is submitted that essentially the same considerations as were set forth above with respect to the first prior art rejection would also apply equally as well to this rejection of the dependent claim 6. Accordingly, withdrawal of the rejection under 35 U.S.C. § 103(a) and allowance of claim 6 are respectfully requested.

In view of the foregoing, it is submitted that the subject application is now in condition for allowance and early notice to that effect is earnestly solicited.

In the event this paper is not timely filed, the undersigned hereby petitions for an appropriate extension of time. The fee for this extension may be charged to Deposit Account No. 01-2340, along with any other additional fees which may be required with respect to this paper.

Respectfully submitted,

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